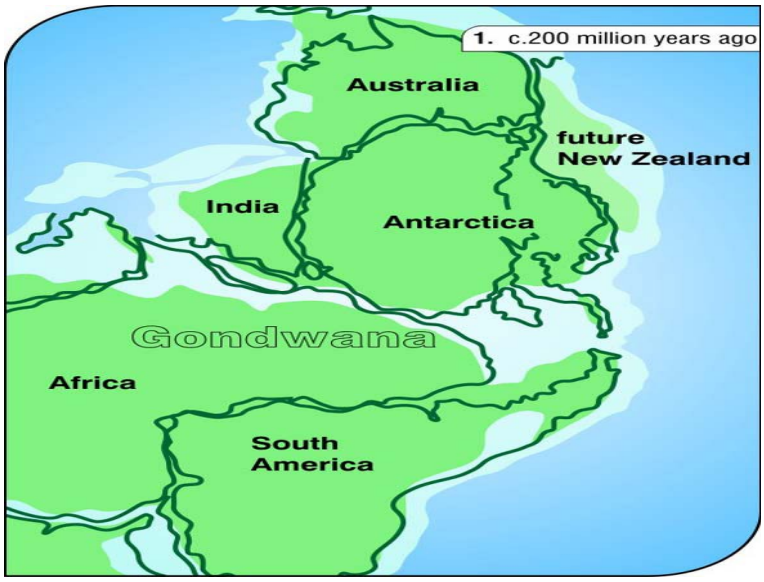
Kyle Craig
604897

29/06/2020



The geological and biological origins of New Zealand

Introduction:

This essay is a general background and historical information on the formation of New Zealand and it's land forming processes including glaciation, volcanism and tectonic plates. This essay also includes an example of unique flora and fauna species in New Zealand, where they are found and an explanation on why and how these species are unique to New Zealand.

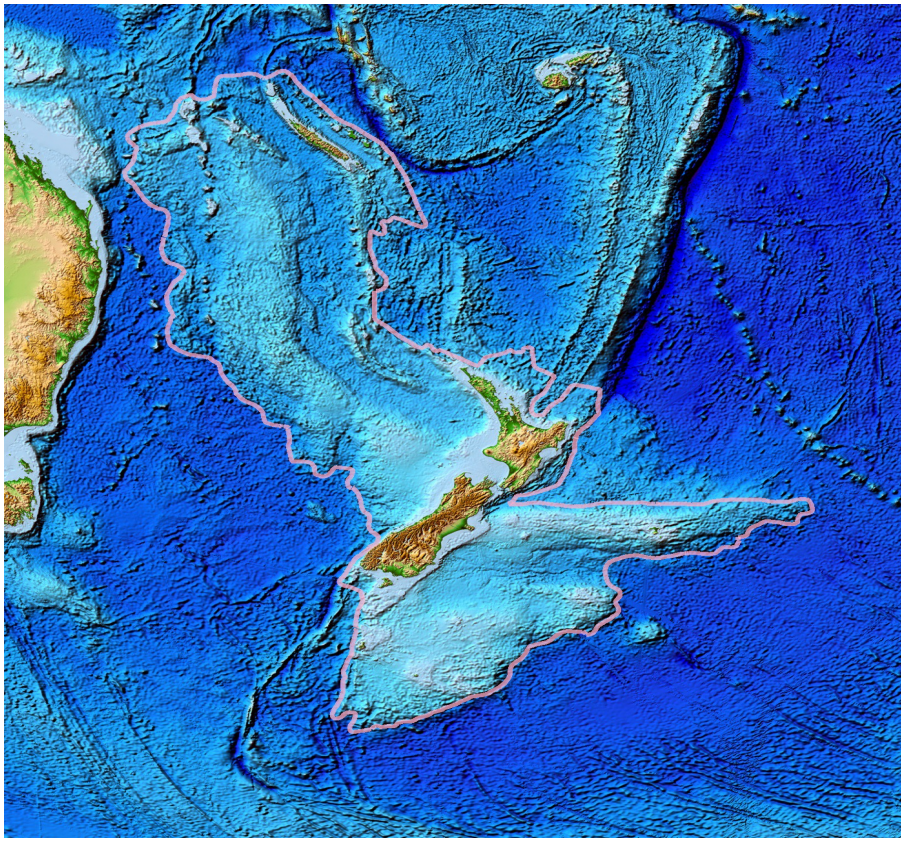
Geological and Biological Information:

Geographically located East of Australia, New Zealand is the back bone atop the meeting of the Australian and Pacific Tectonic Plates. New Zealand is in a continuous cycle of geographical events taming, shaking and reshaping the landscape and climate.
268,000sq.km in size, New Zealand is a part of an ancient continent Gondwana that broke off around 85million years ago and moved into the Pacific Ocean. New Zealand being a margin of that split from Australia, and Antarctica. On board were a number of species of Flora, Birds, Reptiles and invertebrates. The rivers of Gondwana carried minerals and sediment into the oceans. Over millions of years these sediments built up until movements on the sea floor carried them towards rising lands, plastering them on new coastal mountains and enlarging the land.

The land-masses continued to rise, subduct and separate until around 56-34million years ago when an area of that break split and moved East off of

Australia forming the Tasman Sea and the Australian Plate. In the last 25million years that break has formed and closed the plate boundary of the Australian and Pacific which resulted in volcanos and uplift, thus giving rise to the area we calculate today.

New Zealands long narrow mountanious landmass and lowlands are merely highlands of this submerged continent. Offshore drilling shows that the same type of rock that makes up the Continental Shelf also makes up much of the Southern Alps.
Under deep heat and pressure, rocks were completley changed and re-grouped into new minerals. Deposition led to much of New Zealand being covered in sedementery rock and swamps became widespread. As the land subsided further, small islands remained, until widespread volcanic fields begun to emerge in both the south, south-east and the north. In the last 1.8million years the Southern Alps have risen to 3700m and in the Ice Age's Glaciers formed and moved land into Fiords admist an area of violent earthquake and volcanic activity.



ZelandiaTopography https://www.thoughtco.com/zealandia-missing-continent-4154008

Examples and Explanations for All 3 Land-Forming Processes:

The earth has had many Ice-Ages lasting for thousands of years and Glaciers, built by Winter snowfall exceeding the amount of Summer melt, expanded to cover large areas. Between Ice-Ages, as we are today, glaciers shrink, bulldozing rock and sediment into valleys, fiords and lakes. Rock and shingle have replaced

snow around some peaks of Aoraki Mount Cook and the Southern Alps.
Among the fastest rising mountains in the world and shielding the East Coast of the South Island from the roaring Antarctic and Tasman winds, the legacy of Southern Alp Glaciers is the quaternary moraine and glacial debris that settled Eastward and formed the Canterbury Plains. A lowland area of the East Central South Island, an area of about 240km by 70km in size.
Built from glacial outwash, warmer periods within the last 2 million years has seen the sea level rise and cut coastal terraces, as seen in river valleys, and exposed sand, blowen into the formation of dunes.
Erosion has been the building powertool of New Zealand.

The geology of New Zealand is noted for its volcanic activity caused by the subduction of said tetonic plates causing melting in the mantle below the crust. When massive stretches of the earths lithosphere continually shift, rock and descending land mass sink deep into the earth where pressures climb, releasing water out of rock and forming molten lava that falls into the earths upper mantle. Build up of pressure and tectonic activity in active areas form magma, that can make it to the earths surface.
But, New Zealand also has many volcanos that are not clearly related to plate subduction for example in Dunedin, Ranfurly, Banks Peninsula and the Auckland Volcanic Field.
Lava rivers flow into landscapes and Intra-Plate basaltic volcanic eruptions were active in the last 2.5million and 12.000 years ago. Tongarero, Taupo and Ruapehu for example.
About 250,000 years ago the Auckland Volcanic Fiels begun erupting, with most of the promiment cones forming in the last 30,000 years. The field is currently dormant but further eruptions are expected.
Geological change has remained rapid in the last 10,000 years characterised by a warm and relatively stable climate.

Watch: Volcanic formation of New Zealand
https://www.youtube.com/watch?v=6uXvxqt1Il0

Great stress is built up in the earths crust due to constant movement of tectonic plates. This stress is released by earthquakes on any of the thousands of smaller faults throughout New Zealand. New Zealand is shifting at a rate of apoximetly 40mm per year and because the Australian Plate is subducting under Fiordland, frequent deep earthquakes result but shallow earthquakes are more widespread occuring almost everywhere throughout New Zealand everyday.

Flora and Fauna Examples Given and Explained:

Around 80-100million years ago New Zealand drifted South-East from Gondwana into the South Pacific taking with it the life force of abundant birds and plants aswell as pre-historic wildlife including Tuatara, Weta and the Giant

Snail.
New Zealand was surrounded by sea when marsupials evolved around 70million years ago.
For some time, only birds and seeds could travel across the sea. The Tasman Sea was a distance of around 2000km wide at this time.
Isolation from distant land masses saw predator free biodiversity and a re-written eco-cycle evolve into a unique wonder compared to other planet families a world away. As a result several New Zealand native Birds filled the neich of carnivorus predator and became flightless. Ancestors of the Wren and Wattle Bird species that are native to New Zealand may have arrived arround this time as well as the Short-Tailed bat, arriving from Australia, meaning yes, many native New Zealand plant varieties <u>are</u> related to plants found elsewhere. But fossil records show that many New Zealand native plants are similar to those that were present on Gondwana however, indigenous flora have had Time to evolve into a unique species on New Zea<u>land</u> and have considerable varying characteristics endemic in nature.

Animals and plants evolved together within the environment of this hidden land and overtime finely developed and finely tuned ecosystems interdependant on oneanother but unique to that habitat.
But, this made these complex ecosystems and environments susceptible to changes in balance of shift. Now, 180 of our native plants are endangered including the Kaka Beak and the Tecomanthe Speciosa.
Found on a number of farms and vineyards the Kaka Beak is named for its scarlet red flowers shaped like the beak of New Zealands native Kea. It grows around Northland, Hawkes Bay and Great Barrier Island. There are only Two species, but Goats Hares and invasive Weeds destroying or competing for nutrients has seen this specie of plant number amongst the endangered.
With links to the Dinosaur, the native Tuatara is found mainly on islands around New Zealand's coast. A specie that globally begun its descent to extinction around 60 million years ago, the Tuatara, is the only beak headed reptile left in the world and exists today on protected off-shore islands.

Conclusion:

Native flora of New Zealand exists in an ever changing world and climate that the ability of an eco-conscious fauna is a responsibility, to play a balancing role as an inhibitant across individual eco-systems.

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Kyle Craig
604897

08/07/2020

Introduction to Ecology and Conservation

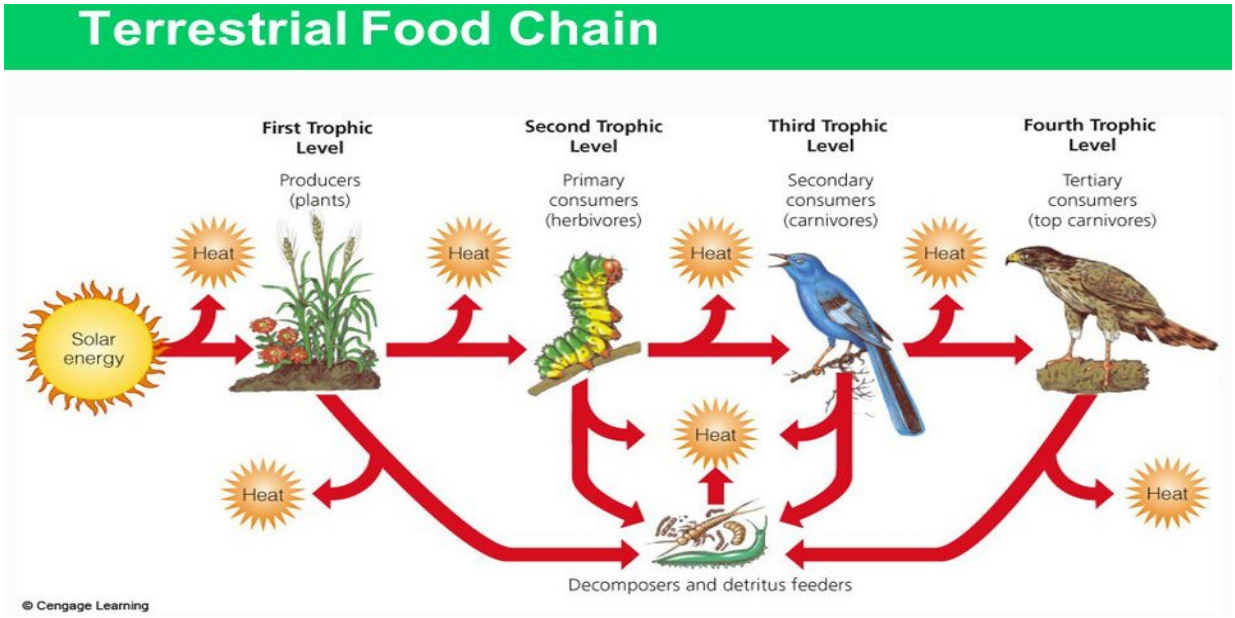
Introduction:

This essay is a focus on the principals of conservation in relation to terrestial, fresh water and marine ecosystems, including their food chains. Humans, as individuals and society have adopted value-based attitudes about how the condition of an environment and ecosystem can or should be 'modified'. Ideas about what constitutes a normal environment or ecosystem in comparison to future models or a missed glimpse of the environments past are often strongly influenced by what is experienced in a persons lifetime. Universal conservation integrity and principals are guidelines across a number of individual ecosystems that drive our value based approach to sustainability, reduction of the impact of human activites and the conservation of natural resources.
Ecosystems are defined as physical environments that are interrgrated with its biotic compoments. Functionally, the progress of a specie, disturbance cycles, flows of energy, nutrients and non-living materials underpin the concept of an ecosystems health or integrity.
Any description should encompass the four elements of the abiotic environment. The characteristic biota, the key processes and interactions plus it's spacial distribution, with emphasis placed on it's unique features, distinctions and relationship with other associated units. (Keith et al. 2013)

Principals Of Conservation For Terrestial Ecosystems:

New Zealands Biodiversity Strategy of 2016-2020 aimed to halt and ultimately reverse the decline of indigenous biodiversity, or to maintain and restore remaining habitats and ecosystems. Significant progresses have been made in recent decades including our understanding, managing and reducing threats to and loss of, our unique biodiverse ecosystems in New Zealand.
Egological Reserve Systems are established conservation areas that cover a large range of ecosystem types and can protect a species there from early extinction. Ecological Reserve Systems are areas that are managed with principal functions of protecting a species or group of species, and promoting the ecosystems natural sustainable and evolutionary balance and progress. This includes effects on how energy is passed from one living thing to another. The terrestial food chain is a network of links (or prey as you will) beginning with producer organisims and ending with apex animals. Observations and analysis of food chains allow us to

get to know how organisms are connected to oneanother.



A quarter of New Zealand is under native forest. As our knowledge of ecosystems and methods of pest control improve then a principal of terrestial conservation becomes the education of society on conservation and environmental issues, guiding peoples behaviour or evaluations.
Laws can govern guidelines but the best people to police the people is the people themselves, so changes in our eco-conscience, and national keep New Zealand clean incentives can remind New Zealanders that our natural environment is at the heart of our global image and international tourism industry.
Terrestial ecosystems are defined as all land in New Zealands terrestial region that is temporarily or permantly above mean low water spring, or the average low tide. Including the foreshore. (conservation Act 1987)

Principles of Conservation for Freshwater Ecosystems:

Disruption to the natural freshwater flow by human activities has led some New Zealand freshwater ecosystems to a crisis point. The New Zealand Conservation Authority acknowledges the existance of freshwater in it's various states. The water-cycle, in the atmosphere, as snow and ice and in its liquid form, both above and below ground. Freshwater environments include lakes, rivers, ground water, wetlands, estuaries and geo-thermal waters.
The NZCA acknowledges the established National Policy Statement for Fresh Water (NPSFW) under the Resource Managment Act. This is a planning instrument that will underline how freshwater will be managed in the coming years. The NPSFW aims to maintain and improve water quality through it's establishment of 'bottom lines' and 'bands' for the management of water quality and ecosystems.

https://www.doc.govt.nz/about-us/statutory-and-advisory-bodies/nz-conservation-authority/policies/freshwater-principles/

The NZCA functions under the vision: to preserve so far as is practical all indigenous freshwater fisheries, and protect recreational freshwater fisheries and freshwater fish habitats.
Principles that guide the conservation of freshwater ecosystems include,

- **Governance**
- **Protection**
- **Sustainability**
- **Managment**

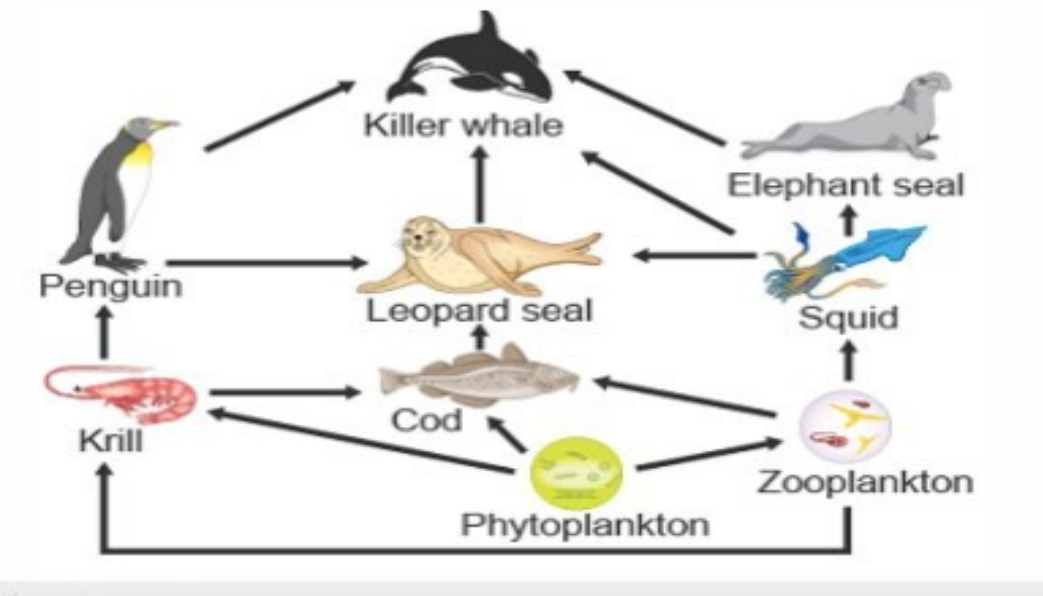
Socialogically, Good Farming Practice principles allows farmers and growers an ability to design their systems in a way that reduces their impact on freshwater. Education, information and guidance is key as the farming industry still has a huge impact today on New Zealands freshwater ecosystems.

Energy flow in freshwater ecologies is dependent on the natural replenishment of fresh water from lakes and mountains. Plants and animals co-inhabit and rely on eachother to live, and every living thing must have energy to survive.
Plants and producer organisms play a vita role in freshwater ecosystems but are highly vaulnerable to the effect of climate and human activity across all inter connecting environments. An example of freshwater food chain is as follows:

Principles of Conservation for Marine Ecosystems:

The New Zealand Conservation Authority has developed marine principles that use governance to ensure the protection of marine life, and the sustainable use of marine resources. Acknowledgment of the interaction of freshwater with the land, from the mountains to the open sea and it's essentialness to marine life underlie the values of the NZCA and the RMA.
Survey, monitoring, analysis and assessment preceed planned use within marine environments in New Zealand in accordance with the Resource Managment Act. This accounts for protection of biodiverse ecosystems within freshwater marine environments and preservation of its food-chain cycles.

Phtoplankton, a flora of freely floating minute organisims, play a significant role in the freshwater marine food chain, as converters of the suns energy into nutrient dense food. Phytoplankton uses carbon dioxide, releases oxygen and converts minerals to a form essential to animal life. Freshwater marine ecosystems differ from environment to environment but the associated food chains can be commonly diverse, for example:



Conclusion:

The New Zealand Resource Managment Act and it's associated legislations in New Zealand policies ensure the values, principles and vision of local and global conservation efforts are guided by sustainable and ethical backgrounds. This includes the protection and preservation of environments and their associated food chains.

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Kyle Craig
604897

14/07/2020

Introduction to Ecology and Conservation

Introduction:

This is an essay discussing the past and present situation of pests and predators introduced to New Zealand. This essay also discusses my own opinions (for and against) toward the control and management of introduced pest species. Certain introduced animals have done immense damage to New Zealands native flora and fauna since their arrival from their distant habitats. They found a lush and plentiful bosom of earths natural life force and soon, generations upon generation left their (un)natural legacy upon New Zealands landscape.

Past and Present Situation of Pests in New Zealand:

For the last 50 years we have been successfully erradicating rats from around New Zealand islands. Problem pests in New Zealand can be narrowed down to three mammals.

Possums,
Stoats
and Rats.

It's because of the destructivness of these three alone, and success in eradicating them on surrounding off-shore islands, that New Zealand has endevoured to reduce pest numbers on the major North and South islands by 2050. Means of eradication involve poison. The use of poison control methods locally in New Zealand are highly controversal leading to extraordinary actions such as interference and protests.

Arguments Against:

As a legal guardian and advocate of animal rights, many organisations, Such as the SPCA claim that the use of toxins as a control/kill method for environmental pests is inhumane (SPCA 2019) and poses a high risk of secondary poisoning. Freshwater concerns argue that poisoned pests may seek hydration and die in waterways, therefore affecting that freshwater ecosystem.
These concerns are equitable, and other forms of pest control can be used, such as trapping and caging animal pests to then be humanely euthanised. This reduces the impact on the terra that absorb these toxins and only the target animals will be put down after human inspection. Possum fur could be sold to cover a small percentage of the costs.
The SPCA addresses the toxic unpleasant death of poisons compared to kill traps. They appeal as humans, at the top of the food-chain, that it is our responsibility to have ethics and morals within our pest control methods. This includes those used for feral cats, mice, rats, possums, deer, pigs, goats, stoats, ferrets, weasles and any unwanted fauna.
Most people agree that problem pests need to be controlled in areas where it is in the best interest of our valuable and native, flora and fauna (but there is some disagreement about cats, deer and pigs)

Mediation:

Organisations and groups energeticly raising these valid questions are portrayed as extremists or conspiracy theorists. This further undermines the point of the matter for both sides, as it fuels suspiscion and 'blindly' refuses real science and experimentation data, as they just slowly become weapons. Neutral parties can become spent and fall into the percentage of the disinterested.

Arguments For:

Poison is the only effective barrier between New Zealands native flora, fauna and extinction. Rats, Stoats and Possums are not inherently bad, and they do fit perfectly into ecosystems in other countries as their prey and predators evolved with them, but in New Zealand, their relentless predation has gradually driven many of our native species to extinction. Our native species have no defences against them.

Beacause poisons (such as 1080) target rats, mice and possums, and are effective for stoats because they scavenge these poisoned animals, it is well-suited for pest control here. 1080 for example requires one treatment every three years and dilutes rapidly (often within 24hrs) to harmless levels. (DOC.govt.nz) allowing birds to breed and survive, and flora to flourish.

Poisons that <u>can</u> be applied aerially for pest control are valuable because of their ability to manage pests efficently on larger secluded scales. Alternative ground control methods are less effective or efficient, plus they require a lot of work and traps require heavy maintenance and inspection, often in difficult terrain.
Poison control methods in New Zealand are regulated through legislation and protocols, and in well regulated environments, poison use in highly effective. If poisons are dangerous and extremely toxic then the risk control assessments that are in place would not legally allow it's use in New Zealand, and the Department of Conservation works closely with the Ministry of Health throughout every operation. Poison use <u>has</u> been a sucessful control method in New Zealand.

<u>My Personal Opinion</u>:

Introduced Species that were brought to New Zealand by Humans as tools, but have become pests and overtime damaging to the ecological balance are but just something else that we brought along side us on an empirial crusade. Singiling out and graphing their activities and impacts, to demonise their expiring use, over such a many generations, has seen the ecosystem evolve alongside with them.
Endemic species are always the victim and our efforts to reduce population numbers, of destructive pests overtime, will also see the ecosystem evolve with this activity, as it's within it. Success in taking life from this system, will give life in another too and yet, this change will have a balance to play.

I believe poison use can be unintentionally harmful but it's effectiveness and success in the past brings this to a balance in my opinion and is worth it's use, if we correctly monitor it's use. With population reduction in focus, poison monitoring would allow environmental scientists to gauge and evaluate changes unknown, from a pests life cycle within the grand scheme of a larger life cycle, throughout it's eradication.

Introduced pests used to be here <u>with</u> us but now we point out their value and trail of destruction negativly into the consciousness of the human population who learn to choose the levels of intristic humanity that they show towards mammals, dependent on their likeability.
Introduced pests play just as much a part as all of Humans in the way we stun the balance of things that we discover and overtime, reshape and manipulate our environments. We can blame them, but the philosophy and power of Conservation that we now inherit, plus its means and methods toward pest control, controversal or not, is a system that I believe is 'just' in it's approaches, evaluations and vision for the future. Tho, I would just call it population reduction.

Conclusion:

Socially complex arguments are more often arguments about values, morals and choices, than they are about facts. Scientific evidence is evolving, but this is unlikely to resolve the clash of values that we see around the world.
Looking more to facts, science and observation along with data and analysis, this could be a mediator if it wasn't pulled at by both sides. Science brought us poisons but advancements in humane genetic modification, as means of pest control, plus more understanding about the impacts of current pest control methods and the environments they interact with, is progressed through New Zealands ambitious goal to be predator free by 2050.

REF:

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Kyle Craig
604897

05/07/2020

ACTIVITY

Go to http://www.stuff.co.nz/environment/100483985/Should-we-learn-to-live-with-introduced-species-rather-than-wipe-them-out-completely

Do a keyword search here and via Google to summarise your thoughts on attitudes toward introduced pests in New Zealand. Post a few examples and thoughts to the discussion board

- **Introduced Species that were brought to New Zealand by Humans as tools, but have become pests and overtime damaging to the ecological balance are but just something else that we brought along side us on an empirial crusade. Singiling out and graphing their activities and impacts, to demonise their expiring use, over such a many generations, has seen the ecosystem evolve alongside with them. Endemic species are always the victim and our efforts to reduce population numbers, of destructive pests overtime, will also see the ecosystem evolve with this activity, as it's within it. Success in taking life from this system, will give life in another too and yet, this change will have a balance to play. Strategic reduction kills I found ecologically humane is the use of Sodium Nitrite as it's kill time is short, with signs appearing within 15 minutes and the animal Not seeking hydration from a fresh-water ecosource and dying in it. Sodium Nitrite has low secondary poisioning effect and it breaks down in the environment. Population reduction as a focus would allow environmental scientists to gauge and evaluate changes unknown, from a pests life cycle within the grand scheme of a larger life cycle. Introduced pests used to be here with us but now we point out their value and trail of destruction negativly into the consciousness of the human population who learn to choose the levels of intristic humanity that they show towards mammals, dependent on their likeability. This has become the same with protected lands and our ease of attitude toward unprotected lands for example. Introduced pests play just as much a part as all of Humans in the way we stun the balance of things that we discover and overtime, reshape and manipulate our environments. We can blame them, but the philosophy and power of Conservation that we now inherit, plus its means and methods toward pest control, controversal or not, is a system that I believe is 'just' in it's approaches, evaluations and vision for the future. Tho, I would just call it population reduction.**

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Kyle Craig
604897

12/07/2020

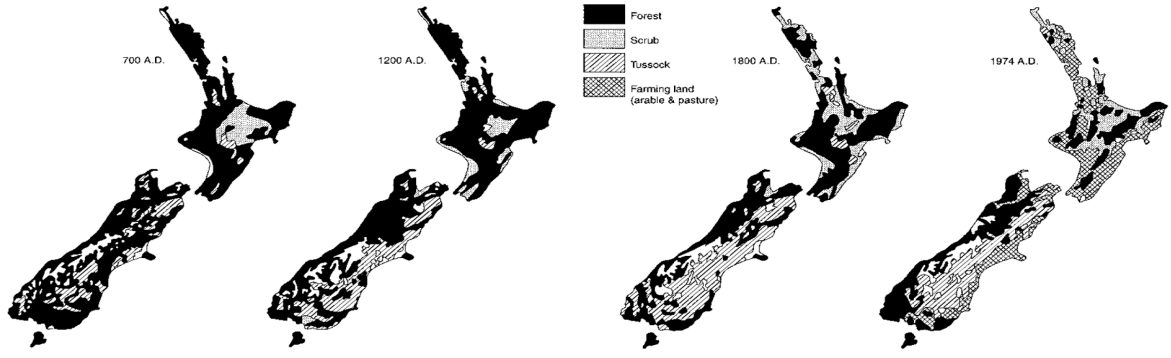
How Settlement has Changed the Landscape of New Zealand

Arrival Of Humans:

Evolving in isolation for millions of years meant that the arrival of humans in the 13th century onward, begun a trail of decline for native New Zealand plants and animal species. Introduced kuri and rats were browsers and Maori were land cultivators. Maori cultivation meant the clearing and burning of areas of forest and land to make way for farming, living, gardening and horticulture by piercing, stirring and pulverizing the soil. Archealogical evidence shows the deliberate improvement of soil by Maori by adding sand, gravel and pebbles but as Maori grew crops, overtime they effected the landscape, by clearing large areas and altering soil and wetlands. (Wilmshurst 2007)
Maori were also hunters and over time intensive hunting caused the larger, slower breeding birds to become extinct. Maori also hunted fur seals and sea lions. The decline of native species are here acknowledged for their ecological impacts on the landscape in absence, as much as introduced calamitous mammals are in their present destruction.

European settlers by the 18th Century brought new crop plants like potato for example, which they also gave to Maori who both cleared forests to make way for new gardens. Forest deemed unsuitable for farming was logged, with european settlers felling and exporting wood like Rimu, Totra, Kauri and Beech for monetary gain. Export travellers introduced pests and diseases and immigrants continued to bring more mammals. By 2005 Forest cover in New Zealand was reduced from 80% to 24.8% (Wilmshurst 2007)

New Zealand vegetation: Pre-Polynesian (700 CE), Pre-Classical Maori (1200 CE), Pre-European (1800 CE) and Present (1974 CE) – Williams (2006)



Wetlands and Erosion:

Settlers drained large swamp and wetland areas for the conversion into Farms, Towns and Thoroughfare. Now less than 10% of our wetlands remain. In hilly areas European Settlers removed Ferns, Scrub and Tree Stumps which were protective covers and slip barriers. In hilly areas loose soil causes slips during periods of high rain leading to higher erosion. Human manipulation of eroded areas to make way for settlement changed the face and behaviour of the New Zealand landscape.

Fire:

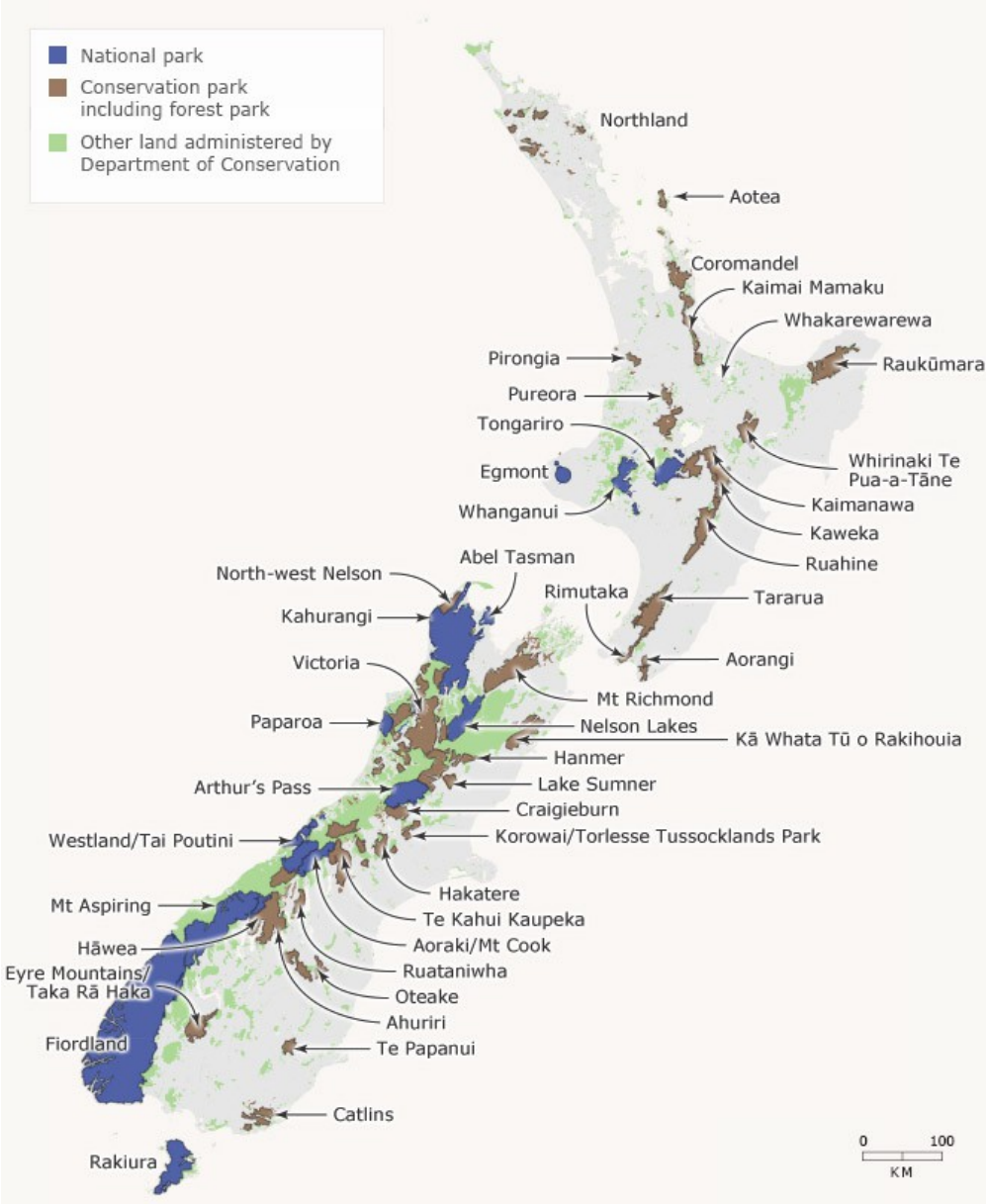
New Zealands native plants can be highly flamable and settlers use of fire-driven means to clear forests and land would have seen unparalled results. Charcoal, Pollen and Diatom analysis confirm that in a short period (of around 150 years) massive fires across the drier regions of the north and south islands reset vegetation on lowland and alpine landscapes.
Fire is recognised as a major driver of landscape alteration and humans use of the tool of fire to clear and refresh new land did incur dynamics of change and alteration inside and outside the fiery environments.

Rivers and Lakes:

Over 60 man-made lakes have been created by settlers in New Zealand for power and water supply. A chain of lakes on the Waikato River were made and many rivers in the South-Island re-routed. A combination of natural processes that change the banks, face and behaviour of rivers (including landslides) have been encouraged by settlers River Control Works to mitigate deterioation of river channels and flood damage whilst increasing development. The passing of the Soil Conservation and Rivers Control Act 1941 includes primary objectives of river control, control of erosion and the promotion of soil conservation.

How Settlement has Changed New Zealand:

Today, with over 1200 Town-Districts and Cities plus more than 100 State-Highways to connect them, alongside definite agriculture and horticultural lands and areas, it is any wonder that roughly only 35.2% of New Zealand has been spared development. Ecological changes that impact landscape through degredation of habitats by settlement (for example) leave only, the inheritance of scattered fragments of our natural world.



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Kyle Craig **05/07/2020**

The History Of Settlement In New Zealand

- **New Zealand remained isolated and untouched from humans for a period of around 85 million years. Within this time biodiversity uniquely evolved in such a way, that the latter impacts of the introduction of species by humans to a foreign ecosystem was consequensive but also destructive. Especially mammals.**
  We have thus since realised our close relationship with the land, a land I believe wasn't ready to be inhabited by the later humans.
- **Eastern Polynesian Navigators discovered and settled around 1250-1300.AD and a series of Tribe and Sub-Tribes began to flourish. Birds, Fish and Mammals were an important source of protein but Maori brought with them Polynesian Dog's, Pacific Rats, Taro, Kumura and Cabbage Tree. Aotearoa then remained undiscovered for around 350 years.**
- **In 1642 Dutch explorer Able Tasman sighted what he named Zealand and made ground but this was short lived. In service of the Dutch East India Company, Tasman in the Heemskerck graphed and charted the coastlines of New Zealand and made landfall in Golden Bay at the top NW of the South-Island, but confrontation with maori soon seen Tasman retreat. Company bosses in the Netherlands rejected the idea of another expedition.**
- **On the 8th of October 1769 Captain James Cook of the Endeavour landed at Poverty Bay on the North-Islands East-Coast and encountered Maori rather successfully. Across three voyages Cook brought many species from Europe which were invasive. The Norway Rat, Stoats and Possums. But Cook also brought Wild Pigs, Goats, Deer, Feral Cats and Sheep. In 1773 Cook planted gardens in Queen Charlotte Sound introducing plants such as potatoes, carrots, parsnips, cabbages, onions, leeks, parsley, radish, mustard, beans, peas, turnip and wheat. That same year South of Cape Kidnappers Cook gave Maori these seeds, including Yams. In 1769 Cook evolved a policy of race relations and co-operation with Maori aimed at simplifying Cooks surveying work and ship resupply. In 1822 and 1823 both Keri Keri and Bluff claimed First Settlement.**

REF:
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The importance of conservation, being as it's almost our only tool to approach our natural environment in a way that conserves and preserves the balance, resources and natural order of it's ecosystem is foremost as scarcity is conservations antonym. Particularly in New Zealand the damaging affects of 19th century Man to influence New Zealands productivity and in consequence, its ecology, is evident as noted through our pest control perplexities for example . Through the introduction of mammals, and then specie control efforts of the 19th century, the impact of this has recently been largley realised and now remains in focus through efforts by the New Zealand Governments implementation of the 'recent' Conservation Act of 1987 through The Department of Conservation and The Ministry of Primary Industries to enforce a legal sense of restriction/tapu.

Conservation by definition is an ideal or action of attitude toward sustainable and nonperishable use of nature, by humans. It is the principal by which a natural Energy, Mass or Momentum remains constant within it's own system without a need for external influence to maintain itself. This also includes depletion and use of resource and conservation is an atmosphere of morality.

Conservation is our key to protecting the earth and it's resources as this conscious ease of use is our only real approach to allowing natural balance and rejuvination.

REF:

https://www.nationalgeographic.org/encyclopedia/conservation/

https://www.bing.com/search?q=conservation+definition&form=EDNTHT&mkt=en-nz&httpsmsn=1&msnews=1&plvar=0&refig=0d848e788cbf40a2b6d7b1dc548dfb88&sp=1&ghc=1&qs=EP&pq=conservation+def&sk=PRES1&sc=8-16&cvid=0d848e788cbf40a2b6d7b1dc548dfb88&cc=NZ&setlang=en-US

https://www.govt.nz/search?q=conservation

Kyle Craig **27/06/2020**

Conservastion vs Preservation

- **Conservation is the philosophy of maintaining and restoring habitats, protecting species and biological diversity as well as reducing our impact on an environment through destructive activity like deforestation, over fishing and illegal hunting, plus mitigating the environmental impacts of our industry and infrastructure works. Conservation is typically associated with the protection of natural resources, governed legally by an ethical ease of use. For example the Bluff Hill Environmental Restoration Project run by the Bluff Hill/Motopohue Environment Trust, Environment Southland, Department of Conservation, Invercargill City Council and The Community are currently involved in conservation attempts to conduct pest control and habitat restoration to the hill and surrounding areas. By placing restrictions on activity and hunting on and around the hill, we are conserving the current state from more destruction.**
- **The philosophy of Preservation is to maintain historic heritage and protect wildlife, environments and ecosystems that are so far untouched by humans. Often in a more physical sense, with preserves protecting areas, buildings and historic sites as well as cultural resources, preservation is our opportunity to save grace on our activities in vaulnerable areas. An example in Invercargill with our current CBD upgrade is the Invercargill City Council has acknowledged our heritage in our buildings, landscapes, waterways, parks and monuments. The ICC heritage stratergy will guide our future City-Centres decisions and initives, in line with the preservation of our central city environment, heritage, flora and fauna.**
- **Conservation and Preservation in my opinion are both hand in hand but these concepts sepratley allow groups to approach an issue with a similar end goal but different focus strategies and priorities. Conservation allows us to gauge our use of natural resources where preservation asks if we should be garnering there in the first place. I believe conservation justifies use of a natural resources where as preservationists almost disagree. Preservations evaluate and balance natural habitat ecosystems and heritage while graphing specie activity and its impact on balance, including our own.**

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https://www.bing.com/search?q=conservation+philosophy&form=EDNTHT&refig=3f75f8f3659e45a08d6bec4c023c996f&mkt=en-nz&msnews=1&sp=6&ghc=1&qs=AS&pq=conservation+ph&sk=PRES1AS5&sc=8-15&cvid=3f75f8f3659e45a08d6bec4c023c996f&cc=NZ&setlang=en-US
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Kyle Craig **24/06/2020**

- **Unique characteristics of New Zealands native animals like the short tail bat, giant snail and our array of birds are their dull colors, slower breeding behaviours and due to an absence of ground predators, some species have trademark flightnesness. New Zealands Only native mammal is a Bat and with time, our native Birds, Insects and Lizards came to occupy the role of mammals in this ecosystem. They became ground dwelling, living in hollows, burrows and foraging the ground for food. Birds beacame the predators, scavangers, herbivores and insectivors. The largest and only alpine parrot, the Kea, inhibit the South-Island. The Ruru/Morepork, tho small, with bright yellow eyes and brown ruffled feathers, is New Zealands only surviving native Owl. An ability to adapt to changes in climate and still survive, has character.**

- **Unique characteristics of New Zealands native plants aside from their endeminism and hybridization is that a majority of New Zealands flora is evergreen. Most native Trees in New Zealand are inhibited by birds and have very few defences against mamillian predators. There are few fire adapted species and few are cold tolerant. Many native plants have a branching degree of separation. They typically have small white flowers and distinctive individual Male and Female organisims, meaning it is dioecious/bi-parental.**

REF:
https://teara.govt.nz/en/native-plants-and-animals-overview/page-4
https://en.wikipedia.org/wiki/Flora_of_New_Zealand
https://www.sciencelearn.org.nz/resources/1440-new-zealand-s-unique-ecology

Kyle Craig **20/6/2020**

ACTIVITY

Have a look at the following image and the boundary (pink line) between the Australia and Pacific plates. The yellow and pale brown areas are continental crust

What are the areas of convergent and transform boundaries and which plate is subducting at the convergent boundaries?

Indicate the direction of movement of the Pacific Plate along the Alpine Fault? What is the evidence for this movement and over what timeframe has it been happening?

As the plates continue moving along the Alpine Fault what is going to happen to the South Island?

- Puysegur Trench in the South Tasman Sea is the convergent plate boundary where the Australian Plate Subducts beneath the Pacific Plate to around 200km deep. The Alpine Fault along the West Coast of the South Island is the Transform Boundary where the fault lies at a slight angle to the plate boundary of the Australian and Pacific Plates.
- Along the Alpine Fault the Pacific Plate movement is a Southward, Sideway as-well as Slight Upward movement which is evident by the strong boundary between Westland and the sudden rise of the Southern Alps, which has occured within the last 10 million years.
- As the plates continue moving at their current angle along the Alpine Fault at their current average speed of 35mm/year the Alpine Fault will continue to shift and oneday could rupture causing a jump in shift and landslides to reshape the landscape. As the Australian Plate sinks further at the convergent subduction zone into the mantle volcanoes may occur in this southern region in the future. A rupture along the Hope Fault at the North of the Alpine could pottentially split the South Island along the Marlborough Fault System.

to live in a city with interesting stuff
is imperative for us, and kids that are smart.

When i was a kid, my city had a pyramid, and i participated.
like a beacon of light, i rode my bike to the museum everyday, for ages
i knew heaps about the tuataras – and i could name them.
Lindsay and Lloyd were the first scientific minds i'd met like mine
and they would say the same stuff
so i felt lucky to be acquainted, especcially at my age
but,
sometimes it dosent take much
before cunts come up with plans that they've made up
thed say wait son,
if you just focus on One topic and ace it
innovate stuff – be greatest
but i'd say wait cunts
that sounds like a narrow path that takes ages
and really
i just like to vibe to those kinds of conversations
and don't require expectations.

my daughter's the same, sa
please let this be a place tha
future generations of smart ones can be raised in
a place where thats not mental
thats amzing.

Kyle James Craig
Resident of Invercargill
1987-